Dustin O'Brien

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Education

Salisbury University August 2021 – May 2025
GPA: 3.608 | Cum Laude | Dean's List (Spring 2023 - Spring 2025) *Salisbury, MD*
Major: *Computer Science, Data Science* ***Minor:*** *Math* ***Tracks:*** *Software Engineering & AI / Algorithms*
Bachelor of Science, Henson School of Science & Technology

Relevant Experience

Computer Science Tutor August 2024 – May 2025
Salisbury University | C/C++, BASH, Java, Python, Valgrind, Lex *Salisbury, MD*

- Personally selected to tutor entire CS catalog including System Software, AI, Object Oriented Programming & more.
- Worked with Department faculty on tutoring plans and shared student perspectives to boost performance.

Math & Comp Sci Tutor January 2024 – May 2025
Salisbury University | C/C++, Java, Python, R, Valgrind *Salisbury, MD*

- Worked with low level subjects to unfamiliar students tasks include simplifying and guiding through course material.
- Simplified wide range of subjects such as Calculus, Discrete Math, Statistics, Introductory Comp. Sci & more.

AI Development Researcher June 2024 – September 2024
Salisbury University | Python, Langchain, FAISS, Pandas *Salisbury, MD*

- Developed 2 LLM applications use in a collaborative environment to explain environmental issues in a concise way.
- Systems include feature-rich Chatbot and markdown file generator to extract client wants using transcipt RAG.

System Administration Assistant May 2024 – August 2024
Salisbury University | Linux, Windows, Python, Pytorch, Anaconda *Salisbury, MD*

- Moved, setup, and connected 44 computers across 4 new labs and assured communication with admin's Foreman.
- Created LLM based attention benchmarks using pytorch to test HPCL computers on Salisbury and UMBC systems.

Hackathon Projects

Lambda Check March 2024
HenHacks 2024 | Haskell, Python, Bash, FastAPI, SQLite, Docker, Jenkins *BoA's Best Financial Hack*

- Built a CI pipeline for Haskell that scans imported packages and source code for known vulnerabilities.
- Personally developed focused on developed of cabal parsing to gather packages to then query to backend API.

Testif.AI April 2024
HackUMBC 2024 | Python, LangChain, FastAPI, Javascript, Jinja, AWS *2nd Overall & Best Educational Hack*

- An educational test maker for students and teachers harnesses LLM technology to write questions off slides & more.
- Worked on web frontend creating Jinja based templates with specialized features such as modifiable text.

Resume.AI January 2025
HoyaHacks 2025 | Next.js, Tailwind, Python, LangChain, FastAPI *No Award*

- A Resume Platform Suite this program uses LLMs and Vector Databases for various application and resume tools
- Built and coordinated Next.JS frontend using framework features such as dynamic routing for interactive pages

Flashcard Factory March 2025
HenHacks 2025 | Python, LangChain, FastAPI, Javascript, Jinja, AWS, Nginx, HTML/CSS *No Award*

- LLM-powered flashcard generator producing Quizlet-compatible outputs from user provided study material
- Personal work focused on Middleware and server side deployment with FastAPI and Nginx through AWS respectively

Personal Projects

Celite | *Javascript, HTML/CSS, AWS, Nginx, Git/Github* January 2024 - December 2024

- Worked in a Agile/Scrum environment to make Cellular Automaton Simulators for future University Research
- Handled Large Git Merge Conflicts and Server side hosting of Celite while building large JS backend

Portfolio Website | *React, Javascript, HTML/CSS, AWS, Nginx, Linux(Ubuntu)* September 2024 - January 2025

- Built personal Portfolio from personally made and libary components such as MUI and Framer Motion
- Setup personal AWS EC2 Server to host website along with 4 other personal APIs, backends, and websites

Battleship Game Application | *Java, Swing, Git/Github* January 2025 - March 2025

- Developed an OOP Battleship game with a Java Swing UI, applying MVC and Observer patterns for responsive code.
- Worked in a full stack environment to add server backend enabling and real-time interaction via the Swing frontend.

Flashcard Mobile App | *Java, Android Studio, Figma, Firebase* April 2025

- Built flashcard mobile app for Android with Figma designed friendly UI
- Handled Java backend for server communication and logic with usage of OOP design patterns

Attention Based Chess-bot | *Python, Pytorch, Pandas* March 2025 - May 2025

- Designed and implemented custom attention based chess bot with customizable sizes and simple to use data interface
- Utilized Complex Neural Network concepts such as ResNets, GPU Acceleration, Batching, Self-attention and more

Research Presentations

Getting Client Requirements with Large Language Models | *Summer Student Showcase — D. O'Brien, Dr. X. Wang*

- Analyzed LLM Capabilities to extract client wants and generate easily readable documents off results

Identifying User Wants Using LLMs | *MIT Undergraduate Research Conference — D. O'Brien, S. Presley et. al*

- An Investigation on Chatbot techniques to distill complex transcripts. Published in MIT Undergrad journal.

Analysis of Collision & Contact Sports Classifications | *SUSRC — D. O'Brien, K. Tranfaglia et. al*

- A ML driven research project to cluster sports as Contact or Collision and creation of graph visuals of findings

Implementations and Appications of Cellular Automaton Simulators | *SUSRC — K. Tranfaglia, D. O'Brien et. al*

- An Analysis of the potential benefits and unique problem solving required to create Cellular Automaton Simulations

Reasoning Adapter: A ToT based Adapter for LLM Reasoning | *SUSRC — S. Presley, D. O'Brien et. al*

- A study into using Tree of Thought & Chain of Thought to improve model accuracy with low latency responses

Technical Skills

- **Tools**: React, LangChain, Next.JS, Sk-Learn, Tailwind, Pytorch, AWS(EC2), OpenMP
- **Languages**: Python, Java, C/C++, Javascript, Bash, LaTeX, HTML/CSS, Haskell, R
- **Technologies**: Linux(Ubuntu, Debian), Docker, Nginx, VSCode, Vim, Git/Github
- **Special Courses**: SWE, AI, LLMs, Data Vis., High Performance Computing, Numerical Analysis